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| 09/988,359 | 11/19/2001 | Jung-Kee Yoon | PO254/US/DRT | 8386 |

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| EXAMINER |
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HANNAHER, CONSTANTINE

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| ART UNIT | PAPER NUMBER |
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2878

DATE MAILED: 04/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|----------------------------------|-----------------------------|--|
| Office Action Summary | Application No. 09/988,359 | Applicant(s) YOON ET AL. | |
| | Examiner Constantine Hannaher | Art Unit 2878 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION**Drawings**

1. The drawings were received on April 12, 2004. These drawings are acceptable.
2. Upon reconsideration, it is agreed that reference characters **109b** and **109c** do not designate both a contact hole and an electrode. Contact holes made in layer **108** do not have a reference character.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
5. Claims 1-6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (US006399962B1) in view of Okubo *et al.* (JP 61-3118 A1).

With respect to independent claim 1, Kim discloses a switching device **T** of an x ray sensor (column 1, lines 10-13, Fig. **5f**) which comprises a TFT **T** provided on a transparent (glass, column

2, lines 34-35) substrate **1** (Fig. **5c**), a first protecting insulation (column 6, line 42) layer **216** which covers the TFT **T**, storage capacity electrodes **222** connected to a ground wire **214** on the first protecting insulation layer **216**, a dielectric (which would protect and insulate) layer **226** which covers the storage capacity electrodes **222** (Fig. **5e**) formed on the first protecting insulation layer **216**, and a pixel electrode **230** connected to one terminal of the TFT on the second layer **226**. No portion of the storage capacity electrodes **222** are seen in the switching device of Kim to shield the TFT region. Nevertheless, the use of a conducting layer to shield a TFT region is known, as shown by Okubo *et al.* at layer **9**. In view of the advantageous shielding described by Okubo *et al.* for layer **9** in a switching element, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include such a layer in the switching device of Kim, and it would have been apparent with a view to maintain the advantageous number of steps in the manufacture disclosed by Kim to include the shielding layer suggested by Okubo *et al.* in the formation step illustrated in Fig. **5d**, that is, as an extension of the storage capacity electrodes **222**, thus making a portion thereof shield the TFT **T**. The connection to ground wire **214** would serve the same purpose as the connection to gate **2** in the device of Okubo *et al.*

With respect to dependent claim 2, the ground wire **214** in the switching device of Kim is connected by a first contact hole **220** which is formed at a lower portion of the first protecting insulation layer **216** and penetrates through it (Fig. **5d**).

With respect to dependent claim 3, the pixel electrode **230** in the switching device of Kim is connected to one terminal **212** of the TFT **T** through a contact hole **218** which penetrates the first protecting insulation layer **216** and through a contact hole **228** which penetrates the second, dielectric layer **226** (Fig. **5e**).

With respect to dependent claim 4, the choice of material for the first protecting insulation layer **216** and the dielectric layer **226** in the switching device of Kim is one within the ordinary skill in the art since, although these layers are beneficially organic, inorganic layers are a known substitute in the art (column 2, lines 41-46) for the purposes of protection and insulation. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to specify inorganic insulation material for the layers **216**, **226** in the switching device of Kim.

With respect to independent claim 5, Kim discloses a method for manufacturing a switching device **T** of the x ray sensor (column 1, lines 10-13) illustrated in Fig. **5f** which comprises the steps of forming a TFT **T** and a ground wire **214** on a transparent (glass, column 2, lines 34-35) substrate **1** (Fig. **5c**), forming a first protecting insulation (column 6, line 42) layer **216** which covers the TFT **T** and ground wire **214** (Fig. **5d**), forming a first contact hole **220** on the ground wire section and patterning storage capacity electrodes **222** connected to the ground wire **214** on the first protecting insulation layer **216**, forming a dielectric (which would protect and insulate) layer **226** on the first protecting insulation layer **216** formed by patterning the storage capacity electrodes **222** (Fig. **5e**), and forming a second contact hole **218** on one terminal portion (source **212**) of the TFT **T** and forming a pixel electrode **230** connected to one terminal of the TFT on the second layer **226**. No portion of the storage capacity electrodes **222** formed in the method of Kim are seen to shield the TFT region. Nevertheless, the use of a conducting layer to shield a TFT region is known, as shown by Okubo *et al.* at layer **9**. In view of the advantageous shielding described by Okubo *et al.* for layer **9** in a switching element, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form such a layer in the method of Kim, and it would have been apparent with a view to maintain the advantageous number of steps in the manufacture disclosed by Kim to include the shielding layer suggested by Okubo *et al.* in the formation step illustrated in Fig. **5d**, that

is, as an extension of the storage capacity electrodes **222**, thus making a portion thereof shield the TFT **T**. The connection to ground wire **214** would serve the same purpose as the connection to gate **2** in the device of Okubo *et al.*

With respect to dependent claim 6, the contact hole **228** in the method of Kim is formed such that a portion of one terminal **212** of the TFT **T** is simultaneously exposed when the first contact hole **220** is formed (Fig. **5d**) and the pixel electrode **230** makes contact with one terminal **212** of the TFT **T** through the contact hole **228** and the second contact hole **218** (Fig. **5e**).

With respect to dependent claim 8, the choice of material for the first protecting insulation layer **216** and the dielectric layer **226** in the method of Kim is one within the ordinary skill in the art since, although these layers are beneficially organic, inorganic layers are a known substitute in the art (column 2, lines 41-46) for the purposes of protection and insulation. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to specify inorganic insulation material for the layers **216**, **226** formed in the method of Kim.

Response to Submission(s)

6. Applicant's arguments filed April 12, 2004 have been fully considered but they are not persuasive.

In response to applicant's argument that the light shielding metal of Okubo *et al.* does not serve as a storage capacity electrode, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). Applicant's representative has chosen to ignore the Examiner's explanation of why it would have been obvious to modify the

storage capacity electrode 222 of Kim to extend over TFT T in view of the suggestion of Okubo *et al.* that a conducting layer may shield a TFT (a beneficial result) but such omission is hardly persuasive.

For at least the reasons explained above, Applicant is not entitled to a favorable determination of patentability in view of the arguments submitted April 12, 2004.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Constantine Hannaher whose telephone number is (571) 272-2437. The examiner can normally be reached on Monday-Friday with flexible hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Constantine Hannaher
Primary Examiner